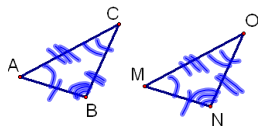


4.2 Apply Congruence and triangles

Congruent Triangles—same size and shape

$$\triangle ABC \cong \triangle MNO$$

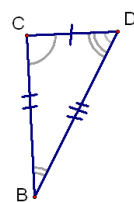
$$\begin{array}{l} \angle A \cong \angle M \\ \angle B \cong \angle N \\ \angle C \cong \angle O \end{array} \quad \begin{array}{l} \overline{AB} \cong \overline{MN} \\ \overline{BC} \cong \overline{NO} \\ \overline{AC} \cong \overline{MO} \end{array}$$



The corresponding parts of congruent triangles are congruent.

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What triangles are congruent?

$$\begin{array}{l} \triangle BCD \cong \triangle LVM \\ \triangle BDC \cong \triangle LMV \end{array}$$



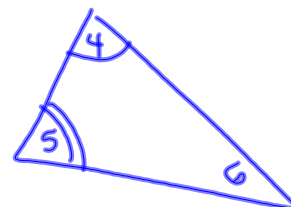
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If $\triangle THE \cong \triangle SAW$, what parts are congruent?

$$\begin{array}{ll} \angle T \cong \angle S & \overline{TH} \cong \overline{SA} \\ \angle H \cong \angle A & \overline{HE} \cong \overline{AW} \\ \angle E \cong \angle W & \overline{TE} \cong \overline{SW} \end{array}$$

Theorem 4.3—3rd Angle Theorem—If 2 angles of 1 triangle are \cong to 2 angles of another triangle, then the 3rd angles are \cong .

$$\begin{array}{l} G: \angle 1 \cong \angle 4 \\ \quad \angle 2 \cong \angle 5 \\ \text{Concl: } \angle 3 \cong \angle 6 \end{array}$$



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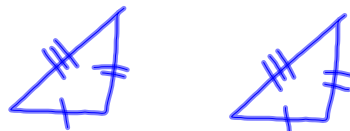
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Theorem 4.4--Properties of Congruent Triangles

Reflexive $\triangle ABC \cong \triangle ABC$ Symmetric If $\triangle ABC \cong \triangle MNO$, then $\triangle MNO \cong \triangle ABC$ Transitive If $\triangle ABC \cong \triangle MNO$ and $\triangle MNO \cong \triangle XYZ$, then

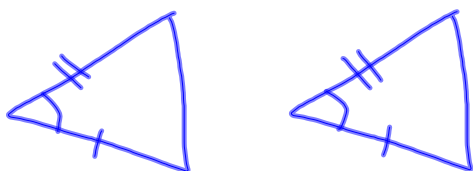
$$\triangle ABC \cong \triangle XYZ$$

4.3 Prove Triangles Congruent by SSS and SAS (section 4.4)

Postulate 19--Side-Side-Side(SSS)-If 3 sides of one \triangle are congruent to 3 sides of another \triangle , then the \triangle s are congruent.

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Postulate 20--Side-Angle-Side(SAS)-If 2 sides and the included angle of one \triangle are congruent to 2 sides and the included angle of another \triangle , then the \triangle s are congruent.

Things to keep in mind for these proofs:

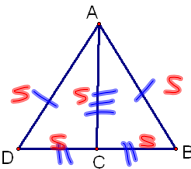
Reflexive
Vertical angles are congruent
Def. of midpoint
Def. of angle bisector and segment bisector
Parallel line facts

and anything else we have learned

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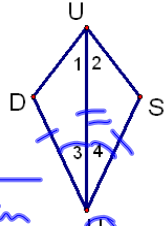
Given: C is the midpoint of \overline{DB}
 $\overline{AD} \cong \overline{AB}$
 Prove: $\triangle ADC \cong \triangle ABC$



①	① Given
② $\overline{CD} \cong \overline{CB}$	② def of midpt
③ $\overline{AC} \cong \overline{AC}$	③ Reflexive
④ $\triangle ADC \cong \triangle ABC$	④ SSS

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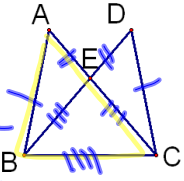
Given: \overline{HU} bisects $\angle DHS$
 $\overline{HD} \cong \overline{HS}$
 Prove: $\triangle UDH \cong \triangle USH$



①	① Given
② $\angle 3 \cong \angle 4$	② def of \angle bis.
③ $\overline{UH} \cong \overline{UH}$	③ Reflexive
④ $\triangle UDH \cong \triangle USH$	④ SAS

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Given: $\overline{AB} \cong \overline{DC}$; $\overline{AE} = \overline{DE}$; $\overline{EB} = \overline{EC}$
 Prove: $\triangle ABC \cong \triangle DCB$



① $\overline{AB} \cong \overline{DC}$ $\overline{AE} = \overline{DE}$ $\overline{EB} = \overline{EC}$	① Given
② $\overline{BC} \cong \overline{BC}$	② Reflexive
③ $\overline{AE} + \overline{EC} = \overline{DE} + \overline{EB}$	③ Addition
④ $\overline{AE} + \overline{EC} = \overline{AC}$ $\overline{DE} + \overline{EB} = \overline{DB}$	④ SAP
⑤ $\overline{AC} = \overline{DB}$	⑤ Subst.
⑥ $\overline{AC} \cong \overline{DB}$	⑥ def of \cong
⑦ $\triangle ABC \cong \triangle DCB$	⑦ SSS

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HW
 p228-229
 #s 3, 5-10, 16, 20
 p236-238
 #s 5-7, 24, 26

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